

High BOD / Backwash System

The high BOD / backwash system is a collection system within the paper mills main building which serves the purpose of collecting flows from two main discharges and a few floor drains in the pulp preparation area of the mill. The high BOD flows come from various starch preparation areas around the mill. The starch used as coating in the paper making process can be high in BOD and therefore is directed to this system to keep it from entering our IWTP and having a negative impact on our BOD limits in regards to our NPDES permit. The backwash from our sand filter operations directed here occasionally needs ph adjustment prior to discharge to the sewer and this system provides that. A process flow diagram (figure 4) is attached.

The system consists of an equalization tank which holds approximately 11,000 gallons and has a submersible mixer adequate enough to mix influent flows thoroughly and keep any solids suspended for transfer to the downstream tanks. A ph probe is located here for monitoring purposes.

From the equalization basin the flow is transferred with a centrifugal pump through a flow meter on to the 1,000 gallon neutralization tank. The neutralization tank contains a mixer and a ph probe connected to an analyzer / controller. The analyzer / controller sends appropriate signals to LMI chemical metering pumps connected to day tanks of alum and caustic for proper ph adjustment.

From the neutralization tank the flow transfers via an overflow pipe in a gravity fashion to an identical 1,000 gallon wet well tank. This tank also contains a mixer and a ph probe in addition to a separate temperature probe. From the wet well tank the flow is directed by a centrifugal pump to a discharge line which ties into the IWTP sludge line prior to discharge to the town sewer.

The control panel for this system contains ph analyzers for the equalization and wet well tanks and an analyzer / controller for the neutralization tank. It also contains two strip chart recorders, one for recording ph in the equalization and neutralization tanks, and one to record flow, ph, and temperature in the wet well.

The panel also contains alarm indicators for the following: equalization and neutralization tank mixer on/off, equalization and wet well level high, alum and caustic storage tank low, ph analyzer trouble, and neutralization and wet well tank ph high/low. The ph high/low alarms are set up for automatic diversion back to the equalization tank to avoid any chance of discharging outside our pretreatment permits limits. The entire alarm system is set up to trigger an alarm on our mills main alarm panel in our boiler room which is staffed around the clock 365 days a year.

A refrigerated composite sampler is set up for daily collection of samples when discharging to allow for necessary TSS and BOD testing required under our pretreatment permit.

Jeffrey S. Poirier
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